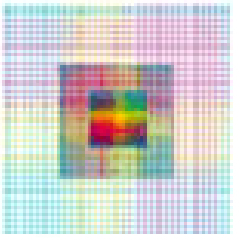

AUDIT II

Country Report
BELGIUM

Bénédicte Meyer
Erja Reinikainen
Final version, August 2002

BELGIUM

SUMMARY OF ENERGY AUDITING

Energy Audit Programmes

There is one regional energy audit programme in Flanders, administered by the Ministry of Flanders. The programme is targeted to industry.
In the Walloon region, there are two energy audit programmes, one for Industry and one for the Residential sector.
In addition to these regional programmes, the Electricity distribution company Energy audits programme is a federal programme which is operational in both the Flanders and Walloon regions, as well as in Brussels Capital.

Electricity distribution company Energy Audits

In Belgium, the electricity consumers pay 0,02 euro cent per kWh (= 0,01 BEF/kWh) purchased which is collected into a fund. The fund is used for Rational Use of Energy activities. Electricity distribution companies co-ordinate energy auditing in industry, in public and private service sector and in households. The energy audit subsidies are paid from this fund. The audits are carried out by approved consulting companies.

Energy Audits in Industry in the Flanders region

The Economics administration at the Ministry of Flanders administers energy audits for medium size and large companies. The audits are carried out by approved consulting companies.

Energy Audits for industry in the Walloon region

A programme of support to energy audits in Industry has been operational since 1984. It is managed by the Ministry of the Walloon Region and allows industries willing to conduct energy saving measures to get subsidies for prior energy auditing.
Since 1995, the Ministry of the Walloon region has put focus on the definition of voluntary agreements and most audits are now performed with the aim of analysing the current situation of energy efficiency and of setting some methodologies and indicators for long-term follow-up (2010).

Audits for the residential sector in the Walloon region: Guichets de l'énergie

The Ministry of the Walloon region has implemented since 1985 some local energy kiosks providing advises mostly to individuals. 13 energy kiosks are operational today, and they have developed a comprehensive programme of auditing, proposing 4 different types of audits for residential buildings, and in some cases for shopkeepers or very small SMEs.
All audits are performed by the energy kiosks auditors and are proposed free of charge. The owners or renters are however requested to contribute to the audit by providing key data.

Other Programmes including Energy Audits

Energy audit for the public sector: the "guidance" programme (Walloon region)

The "Institut Wallon" has developed a programme to support energy efficiency initiatives in the public sector. In the framework of the "guidance" programme, simple audits are proposed free of charge and are performed by auditors of the "Institut Wallon".
A CD-ROM called Energie+ provides to public sector managers very useful technical data and tools for energy efficiency actions.

The AGEBA programme for local authorities buildings in the Walloon region

The AGEBA programme supports financially audits and investments that lead to energy consumption reduction in the public buildings managed by local authorities (municipalities, provinces, inter-communal structures).

Other Activities including Energy Audits

Regional Development Companies

Flanders has in each province a Regional Development Company. One of the employees, the energy consultant, in each development company is dealing with energy saving matters (Energy Cell) and helping industrial companies to apply for subsidies for audits and energy saving investments.

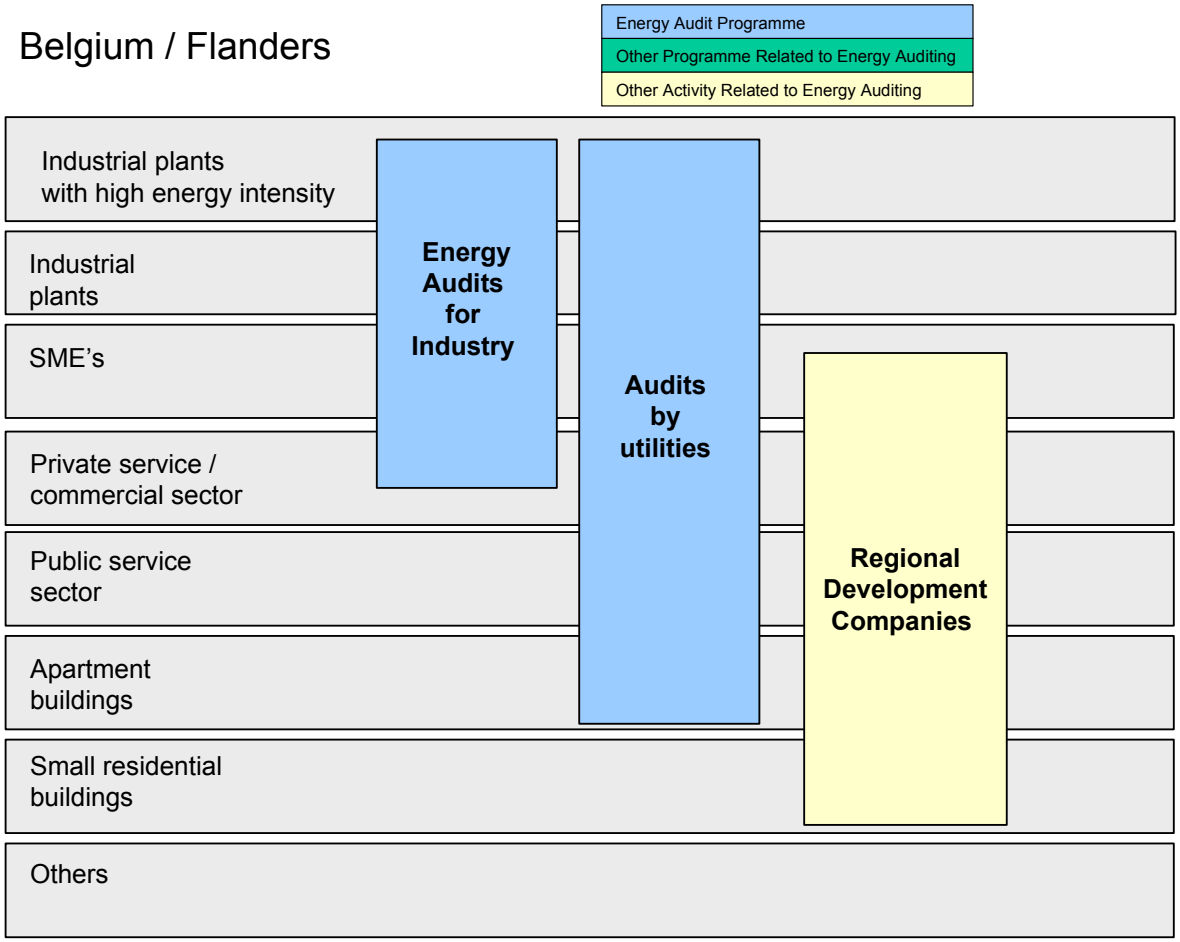

Figure 1. The Map of energy audits in the Flanders region in Belgium.

Table of EAP features coverage, Flanders Region

	Electricity distribution company Energy Audits (Flanders)	Energy Audits for Industry (Flanders)
Status	1996-	1985-
Administration	Ministry of Flanders	Ministry of Flanders
EA models	+	
Auditors' tools		
Training, authorisation	++	
Quality control	++	
Monitoring	+	
Volumes, results	+	
Evaluation		

+++ = Detailed information available
++ = Some information available
+ = Very little information available
= No information available / does not exist

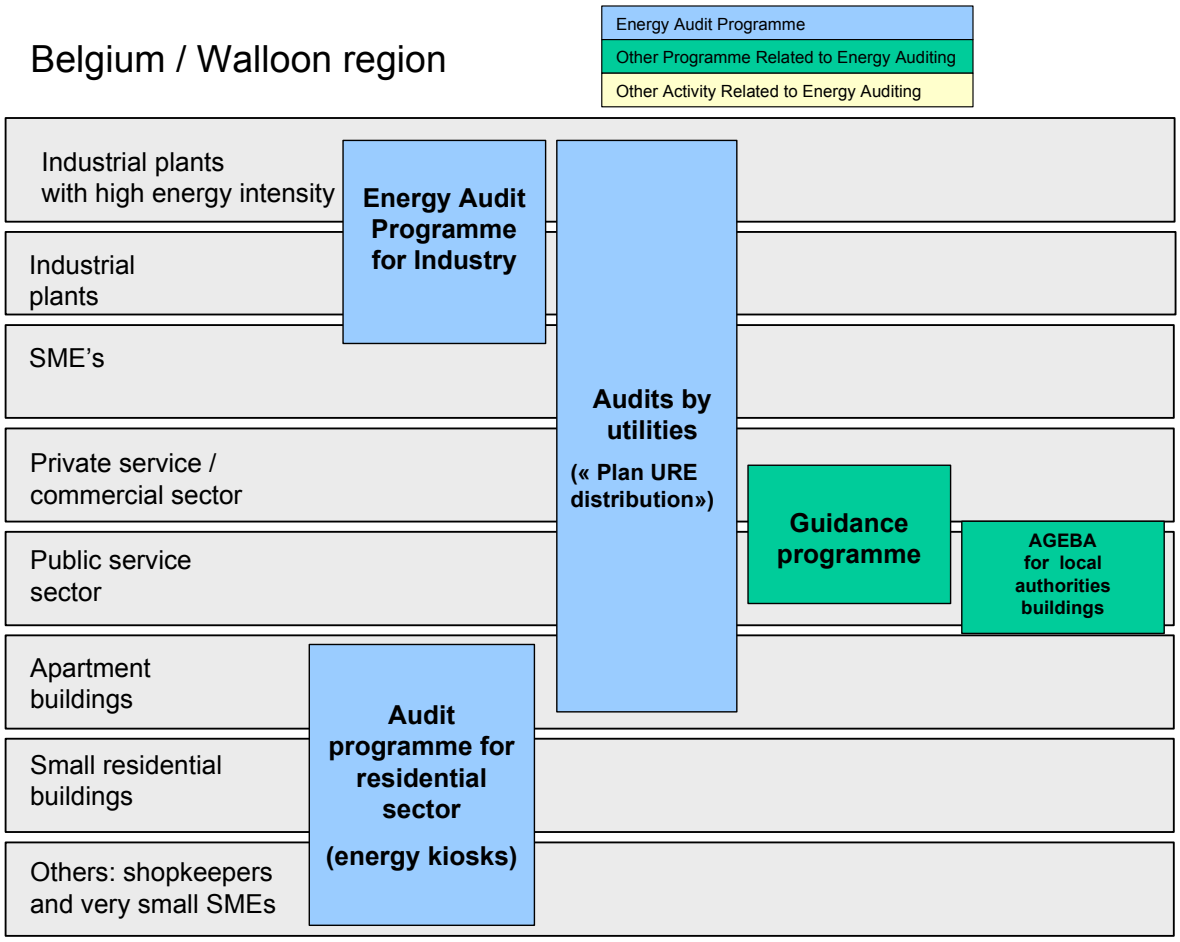

Figure 2. The Map of energy audits in the Walloon Region in Belgium.

Table of EAP features coverage, Walloon Region

	Energy Audit programme for industry (Walloon region)	Audit programme for residential sector (Walloon region)
Status	1984-	1985-
Administration	Ministry of the Walloon Region - DGTRE	Ministry of the Walloon Region – DGTRE - Energy kiosks
EA models	++	+++
Auditors' tools	+	+++
Training, authorisation	++	++
Quality control	++	+
Monitoring	++	++
Volumes, results	+	+++
Evaluation		+

+++ = Detailed information available
++ = Some information available
+ = Very little information available
= No information available / does not exist

Contacts

Energy auditing activities (Flanders Region)	Ann Collys	Ministerie van de Vlaamse Gemeenschap North Plaza B Koning Albert II-laan 7 1210 Brussel	ann.collys@ewbl.vlaanderen.be www.vlaanderen.be
Energy audits for industry (Flanders Region)			
Energy Audit programme for industry (Walloon region)	Ir Claude Rappe	Ministère de la Région Wallonne Direction Générale des Technologies, de la Recherche et de l'Energie (DGTRE) – Division de l'énergie Avenue Prince de Liège, 7 B-5100 Jambes (Namur)	www.mrw.wallonie.be/dgtre
Audit programme for residential sector : les guichets de l'énergie (Walloon region)	Carl Maschietto	Ministère de la Région Wallonne Direction Générale des Technologies, de la Recherche et de l'Energie (DGTRE) – Division de l'énergie Avenue Prince de Liège, 7 B-5100 Jambes (Namur)	www.mrw.wallonie.be/dgtre

Country Report

Country Report written :

- for the Flanders region by	Erja Reinikainen	Olof Granlund Oy, Finland
- for the Walloon region by	Bénédicte Meyer	ADEME, France

Based on the interviews of :

- in Flanders	Ann Collys	The Natural resources and Energy Division in the Ministry of Flanders
	Marc Crepel	Electrabel
	Geert De bruyn	Cenergie cvba
	Date of interview	27.11.2001
- in Wallonia	Jacques Alexandre	Inspecteur général - Energy division – DGTRE - Ministry of the Walloon region
	Claude Rappe	Energy division – DGTRE - Ministry of the Walloon region
	Isabelle Bruyere	Architecture et Climat – Université catholique de Louvain
	Fabrice Derny	Architecture et Climat – Université catholique de Louvain / Institut Wallon
	Carl Maschietto	DGTRE - Ministry of the Walloon region
	Jean-Claude Libert	ECONOTEC
	Vera De Vleeshauwer	COPPEE-COURTOY
	Bruno Verwilghen	SYNERGIA
	Didier Jacqmin	PRIMO-TEM
	Date of interview	09.04.2002

Disclaimer

The information contained in this report has been gathered from publicly available sources and through interviews. All efforts have been made to secure the veracity of the report, however the authors cannot guarantee the content.

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1 Background and Present National Energy Policy

1.1 Previous activities

No information available on previous energy auditing activities.

1.2 Present national energy policy

In Belgium energy policy objectives at national level were defined in the Government Statement of May 1988. The major themes are to create a wide geographical diversification and balance, to ensure a stricter management of energy distribution, to strengthen the rational use of energy, and to place special emphasis on the environment.

In 1994 the Belgian national programme for reducing CO_2 emissions was approved . The target is to reduce total CO_2 emissions by 5% between 1990 and 2000. The 1990 level of CO_2 emissions was 109.5 million tonnes. In December 1997 the Belgian government made the commitment to reduce greenhouse gas emissions by 7,5% between 1990 and 2010.

Since 1989 the regions are responsible for some specific areas of the Belgian energy policy such as the rational use of energy and renewable energy sources. Following the reform of the Belgian state, the Flanders region, Walloon region and Brussels-Capital region have full responsibility for energy efficiency and related R&D activities. There are differences in orientations among the regions and in the objectives as well as measures used. The Belgian government pays attention to the co-ordination of the regional incentives. Co-operation among the three regions and some international activities are carried out in the form of a co-ordination group.

The rational use of energy budget is made on regional level.

Energy efficiency actions have so far been on a voluntary basis. The regions have considered mandatory actions for the different sectors but no actions into that direction have been taken yet.

The municipalities are under the supervision of the regions. Initiatives in the energy conservation field come from the regions, but the municipalities are usually in charge of carrying out the plans. The decentralisation of the demand-side policy at regional level; the federal government having responsibility for strategy aspects, supply-side policy, and energy tariffs; have created a relatively complex situation in the country.

Energy efficiency and The Ministry of Flanders

The energy policy of the Flanders Region has been published for the period of 2000-2004 (Beleidsnota energie 1999-2004) and the specific focuses are set yearly (Beleidsbrief 2001).

The main focuses of the Flanders Region are
- to stimulate the rational use of energy
- to reduce the energy consumption of the residential sector to the level of 1998 by 2004
- to reduce the energy efficiency of industry and the service sector to the level of 1998 by 2004
- to increase the share of environmental friendly production of energy
- to ensure optimal energy supply for a socially acceptable price for all target groups

The Natural resources and Energy Division in the Ministry of Flanders collects information about the energy consumption and saving potential in the various sectors, looks for actions and means to reduce energy consumption, builds a network to disseminate information, co-ordinates energy saving activities, etc.

The energy efficiency activities in Flanders include a subsidy policy and are based on voluntary actions. The Natural resources and Energy Division in the Ministry of Flanders co-ordinates the following activities:

- financial support to demonstration projects in energy technology (renewables, CHP, process solutions, etc)
- increased tax reduction for energy saving investments (to enhance the use of renewables)
- financial support to ecological investments (savings of raw materials and energy in production processes)
- subsidies for associations to improve energy efficiency or to make use of renewables
- grants and actions of the electricity and natural gas distribution companies in all sectors (including energy audits, grants for energy saving investments, financial support for RUE actions, etc)
- grants for renovations and new buildings in the county of Vlaamse Gewest (to take into account the insulation guidelines)
- VAT-reduction in renovations (for energy efficiency improvements of apartments more than 5 years old)
- fiscal motivation measures for energy efficiency (in 2003 a list of supported activities will be published - concerning new and renovated residential buildings)

Energy efficiency in Wallonia

In the Walloon region, energy dependency rate is 98%. Between 1990 and 1998, the final energy consumption has increased by 7% in the region. This has lead the Walloon region to set priorities of energy efficiency very early.
An action plan for environment and sustainable development was approved in March 1995, after the programme for reducing CO2 emissions was defined at the national level.
During the preparation of the equipment plan 1995-2005, it was agreed that on a 10 years period, the objective was to reduce electricity demand by 8 TWh .

In January 2000, the Walloon Region Government approved a contract for the future of Walloon region "Contrat d'avenir pour la Wallonie". In the framework of this contract, a detailed programme for sustainable management of energy "Plan pour la maîtrise durable de l'énergie" is being prepared and is expected to be approved in the coming months. The priorities are:

- Demand Side management and energy efficiency improvement
- Increased use or renewable energies
- Substitution of fuels for lower CO2 emissions and increased efficiency
- Local control and management of the energy market .

To achieve these objectives, the Walloon region implements the following actions:

- **Promotion of energy conscious behaviours**
  This promotion involves information, awareness raising, publication of technical guides, participation to events, dissemination of technical advises, support to audits, organisation of training sessions, energy accounting and consumptions monitoring, dissemination of training tools.

- **Promotion of energy efficient products and equipment**
  This includes regulation on thermal insulation and ventilation in buildings, regulation on boilers efficiency and on appliances labelling, implementation of an energy certification for buildings
- **Promotion of energy efficient investments**
  This includes financial support to combined heat and power and to the use of renewable energy sources, support to investments in industry and in the tertiary sector, strong policy to adopt voluntary agreements with the key energy consuming industrial sectors.

2 Energy Audit Programmes

2.1 Electricity distribution company Energy Audits in Belgium

This audit programme is part of a larger programme called RUE distribution plan which includes audits but also many other RUE activities.

In July 1996 an agreement was signed between the regional authorities and the energy distribution sector. The sector was represented by the companies Inter-Regies, Intermixt and Electrabel.

The programme started in 1996. It will go at least on until 2003 when the electricity market will be liberalised. After that the RUE-issues will be on the responsibility of the grid operators - how energy auditing will be continued in those circumstances has not been decided yet.

Electricity consumers pay a certain percentage in their electricity price (1 Belgian cent per kWh, 0,02 euro cent per kWh) which is collected into a fund. From this fund subsidies for different energy efficiency activities are available. At the moment the energy users in Belgium have to use their local electricity distribution company (the market in Flanders will be liberalised in 2003).

Every year an action plan is made to target the use of the funds. The activities cover all four target sectors (public and private service sector, industry and households). There are general common activities for each year that are included in the services of all electricity distribution companies and natural gas suppliers - these activities include energy audits, energy book-keeping, grants for solar boilers, etc.

In addition to the common activities the energy distributors may choose some items from a catalogue of activities. This way each company can have their "own accents" on the use of the RUE funds.

There are two kinds of distribution companies in Belgium:

- The **mixed intermunicipal companies** covered in 2001 about 48 % of the total electricity supplies on the Belgian market. In these companies the municipalities are associated with the private partner Electrabel.
- The **municipal and pure intermunicipal companies** (i.e. without the participation of a private operator) are responsible for about 13 % of the electricity supplies.

The present distribution companies (mainly intermunicipal companies) are the operators of the distribution network for their respective territory.

The high-voltage network is operated by ELIA, an independent public limited company. Large industrial customers are mainly connected to the transmission grid.

2.1.1 Goals

To reduce energy consumption, promote energy efficiency and to point out actual energy saving measures according to the national policy. Peak shaving is also in the interest of the energy distribution companies.

In the Tertiary and Public sectors it is recommended to combine energy audits to an energy management scheme and energy book-keeping.

2.1.2 Target sectors

Public and private service sector, industry and households.

2.1.3 Administration

Administration of the audit programme for electricity and natural gas supply companies is partly done by the Ministries of Flanders and of the Walloon region (development, guiding, promotion) and partly by the electricity supply companies (development, marketing, technical advice, monitoring).

The Ministries follow the audit programme but the actual monitoring of results is done by the electricity supply companies.

2.1.4 Implementing Instruments

Financing for the different RUE activities is available from the funds collected from energy consumers. About 6,67 million € is available every year for the activities chosen to the common list.

The financing from RUE funds covers different activities:
- performing energy audits
- investment grants (variable speed drives, etc)
- renovating heating systems (solar boilers, condensating boilers)
- relighting
- reducing lighting pollution
- use of natural gas in processes, direct heating by gas
- combined heat and power production
- renewable energy sources

The Ministry of the Flemish region has published guidelines on the activities and grants available for the different sectors (Premies en Acties van uw elektriciteits- und en aardgasleveranciers). These guidelines specify in detail what is the subsidy available for each measure.
The energy distribution companies have published guidelines according to policy of the Ministry of the Walloon region.

The energy distribution company grants the subsidy to the clients from their share of the RUE fund. For energy audits the subsidy depends on the target sector and the type of audit.
The distribution companies are encouraged to provide the whole range of services to the clients - including analysis of energy bills, audits, implementation of measures, follow-up, benchmarking.

The key elements of implementing instruments for the energy supply audits are illustrated in the following table:

Mandatory / legal schemes	**Voluntary schemes**
Energy audits are not linked to mandatory schemes.	No link to voluntary schemes (examples: voluntary agreements, labels, EMAS / ISO 14.000, energy management procedures, etc)
Fiscal incentives (taxes)	**Fiscal incentives (subsidies)**
No link with the tax system.	Subsidies for energy audits and for investments paid from RUE fund (money raised in energy prices).
Marketing oriented schemes	**Policy issues**
Promotion for energy audits (e.g. PR campaigns) done by electricity and gas supply companies, general promotion by Ministries of Flanders and Walloon region.	Energy audits are mentioned in energy efficiency plans Ministries of Flanders and Walloon region.

2.1.5 Energy Audit Models

An energy audit usually covers the heating and electricity usage in building service systems and production processes. The building envelope is included when necessary - eg. in the residential sector. Renewable energy sources are included when necessary.

There are no official rules or guidelines of the contents of the audit or the audit report. However, there are different types of audits specified on a general level in the guidelines of the Ministry of the Flemish region and in the guidelines for the Walloon region:

Residential sector
- energy audit

Industrial sector, agriculture and vegetable farming
- quick audit
- thorough audit
  - general audit
  - one-theme audit

Tertiary sector
- quick audit
- thorough audit
  - general audit
  - one-theme audit

Public sector
- energy audit for schools, hospitals, etc
- quick audit for offices
- thorough audit for offices
  - general audit
  - one-theme audit

The quick energy audit is completed in 1-2 days and is basically a walk-through audit. It is carried out by one auditor.

The thorough general audit is mainly targeted to large industrial sites. The audit work takes 1-2 weeks or even longer, depending on the amount of measurements done during the audit. It is carried out by several auditors, selected according to the site specific needs. The principle is to find the main energy consumers and the most important saving measures.

The thorough one-theme audits cover a wide range of different topics - one topic is chosen for a detailed examination. The one-theme audits are mainly targeted to heating energy consumption, the aim is to choose the most important theme and identify the saving potential in this area. The theme of the one-theme audit is defined by the client or identified in a quick audit. The audit is carried out by one or several auditors, depending on the theme.

The topics of the one-theme audits cover
- peak demand analysis
- reactive power analysis
- electrical motors and variable speed drives
- electrical heating
- uninterruptable power supply
- compressed air
- lighting
- heating, ventilation and air conditioning
- process connected solutions of natural gas

The maximum costs and subsidies from the energy distribution companies for the different audits are:

Sector	**Type of audit**	**Max cost to client €**	**Max subsidy %**	**Max subsidy €**
Residential	Audit	24,79		rest of cost
Idustrial + agriculture	Quick audit		50	173,53
	Thorough audit			
	– general		50	3 718,40
	– one-theme		50	2 478,94
Tertiary				
Schools		0	100	
Hospitals			50 * / 100**	
Offices	Quick audit		50	173,53
	Thorough audit			
	– general		50	3 718,40
	– one-theme		50	2 478,94
Public		0	100	

** when the audit is made*
*** when the energy saving measures suggested in the audit have been implemented*

For schools and public buildings the fund covers the whole audit cost if the audit is performed by the energy distributor or a company approved by the energy distributor.

2.1.6 Auditors' Tools

The energy distribution companies that provide their clients the various RUE activities have developed their own model reports for the different types of audits. For example Electrabel has a model report for a quick audit (Energiescan) and for the most typical categories of one-theme audits (Een-thema audit). Some check-lists also exist, but there is no audit manual for auditors.

A typical audit report on a thorough general audit consists of the following chapters (Cenergie-model):

1. Introduction
2. Present situation
   describing the site, building envelope and technical systems
3. Energy consumption
   heat, electricity, water
   key figures for 3-5 years
   specific consumptions
   energy balance
   emissions
4. User comfort
   results of measurements (temperatures, lux, CO2, etc)
   measures to improve user comfort
5. Energy saving measures
   technical (no-cost, very low-cost, maintenance, major investments)
   organisational (use, operation, purchase of new equipment)
   educational (guidance to users and maintenance staff)
   cost-profit-balance
   cost of saved energy (investment/kWh)

The consultants performing audits have developed their own calculation tools. Cenergie for example has developed tools for field work and profitability calculations.

2.1.7 Training, authorisation and quality control

There are no official requirements set by the Ministry of the Flanders region or of the Walloon region for the basic knowledge and experience of auditors. There is no official or required training for auditors but some discussion groups exist within companies.

Some electricity distribution companies have their own auditors. Auditors from other companies can also execute audits, after the approval of the distribution company. The auditors must also inform the electricity distribution company about the audit and send the report from the audit to them for quality check.

For example the distribution company Electrabel asks consulting companies with good references and long term experience for tenders to set the price levels for the typical audits for different sectors. These prices are valid for one year. The selected companies (about 25 from different speciality areas) are approved by Electrabel and the co-operation is usually on a long-term basis. The clients using these companies for audits are entitled to subsidies.

The electricity distribution companies control the quality of their consultants' work. In Electrabel for example one person is responsible for guiding and checking the auditors' work. The quality control includes the checking of the technical data of the individual audit project and the work method. The reports are checked at random and the auditor will be asked to redo his work if the control detects deficiencies. The consulting company may be removed from the list of approved auditors if poor quality is a problem.

2.1.8 Monitoring

The local energy distribution companies are responsible for the monitoring of the results. The largest electricity distributor in Belgium is working on a monitoring system. The results of all audits will be collected into a database when the system is ready.

2.1.9 Auditing volumes

The number of audits done by the electricity distribution companies in the Flanders region is:

	1996-97	1998	1999	2000	2001
Tertiary sector & Industry	362	136			
Public sector	267	112			
Residential sector	-	48			

The number of audits carried out in the framework of the electricity distribution companies programme in the Walloon region in year 2000 is:

	Number of audits	*Type of audits*
Tertiary sector and SMEs	34	Electricity consumption analysis
	16	Efficient lighting promotion
Industry	18	Energy audits
	31	Relighting audits
	32	Electricity consumption analysis
Residential sector	23	Audits on Social houses

2.1.10 Results

Centrally collected information of the results of the audits and saving potentials, etc. does not exist yet because there are no regional monitoring systems yet. The local electricity distribution companies have the results but no summaries are made on regional or national level.

2.1.11 Evaluation

No information available on programme level evaluation.

2.1.12 Observations and Future Plans

The audit programme by the electricity distribution companies will go at least on until 2003 when the electricity market will be liberalised. After that the RUE-issues will be on the responsibility of the grid operators - how energy auditing will be continued in those circumstances has not been decided yet.

2.2 Energy audits for Industry in the Flanders region

2.2.1 Goals

2.2.2 Target sectors

Medium size and large companies in industry.

2.2.3 Administration

The Economics administration at the Ministry of Flanders administers energy audits in industry.

2.2.4 Implementing Instruments

For medium size and large companies the subsidy is 10% of the audit cost. For small companies the subsidy is 50%, with a maximum of 12 400 € per project, if the advice is given by an approved auditor.

Mandatory / legal schemes	**Voluntary schemes**
Energy audits are not linked to mandatory schemes.	No link to voluntary schemes (examples: voluntary agreements, labels, EMAS / ISO 14.000, energy management procedures, etc)
Fiscal incentives (taxes)	**Fiscal incentives (subsidies)**
No link with the tax system.	Subsidies for energy audits and for investments paid from RUE fund ???
Marketing oriented schemes	**Policy issues**
Promotion for energy audits on a general level is done by the Ministry of Flanders.	Energy audits are mentioned in energy efficiency plans by the Ministry of Flanders.

2.2.5 Energy Audit Models

2.2.6 Auditors' Tools

2.2.7 Training, authorisation and quality control

2.2.8 Monitoring

2.2.9 Auditing volumes

2.2.10 Results

2.2.11 Evaluation

2.2.12 Observations and Future Plans

2.3 Energy Audits for industry in the Walloon region

The energy audit programme for industry has been operational since 1984 in the Walloon region (Arrêté de l'exécutif Régional Wallon (AERW) of 19/12/1984). Although it has obtained positive results in last years, this programme did not allow the Walloon region to meet its objective of a 5% CO_2 emissions reduction between 1990 and 2000. Today, the Walloon region has adopted a strategy based on the development of voluntary agreements with some of the key industrial sectors. In the framework of the agreements definition, audits are made compulsory in most companies: following the individual audits, each company defines its own action plan. After individual action plans have been defined, a sectorial programme for energy efficiency improvement is defined for a whole industrial sector. Both the individual audits and the preparation of the sectorial programme are supported financially by the Ministry of the Walloon region.
This new policy has significantly boosted the existing energy audits programme for industry since 1995, although the overall mechanism of support is unchanged.

2.3.1 Goals

The objectives of this programme is to support the national energy policy of energy efficiency and CO_2 emissions reduction.
In the national plan for sustainable energy management, the objectives set are to go from the "business as usual scenario" that would lead in 2010 to a 6% increase of energy consumption in industry, to a sustainable scenario resulting in a -9% decrease of energy consumption.

2.3.2 Target sectors

The sectors targeted are all industrial sectors. Some actions have also been taken in the public sector.

In the framework of the voluntary agreements policy, most key sectors have already given their declaration of intent, the corresponding energy consumption representing over 90% of total industrial consumption.

The first sectors to sign a letter of intent were the chemical and paper industries in July 2000. In 2001, three industrial sectors (cement, limestone, and non-ferrous) signed a letter of intent.
Three sectors are currently preparing the agreements: ferrous industry, glass and food sectors.

2.3.3 Administration

The audit programme is co-ordinated and managed by the Energy Division of the Ministry of the Walloon Region, Department of Technologies, Research and Energy (DGTRE).
The Energy Division is also in charge of the follow-up of the programme.
In year 2000, the Energy Division employed 25 persons.

2.3.4 Implementing Instruments

The Region offers subsidies of up to 75% of the cost of the energy audits. However, the subsidy is granted only after some of the investments and measures recommended in the audit conclusions have been implemented by the industry.

Financing for the audit subsidies is available from the Walloon Government budget.

In 2000, the focus was put on the audits linked with the voluntary agreements definition: 800 000 euros of subsidies were granted for 14 audits implemented in the framework of the voluntary agreements definition.
In addition to these audits, 15 punctual audits were performed as a decision support tool prior to an investment for energy efficiency, with financial supports amounting to 87 000 euros.

Mandatory / legal schemes	**Voluntary schemes**
Energy audits are not linked to mandatory schemes.	Since 1995, for some of the audits, link to the voluntary agreements with industries
Fiscal incentives (taxes)	**Fiscal incentives (subsidies)**
No link with the tax system.	Subsidies for energy audits and for investments dedicated to RUE
Marketing oriented schemes	**Policy issues**
Promotion for energy audits on a general level is done by the Ministry of the Walloon region.	Energy audits are mentioned in energy efficiency plans by the Ministry of the Walloon region.

2.3.5 Energy Audit Models

An energy audit usually covers all aspects leading to energy consumption. Renewable energy sources are included when necessary.

There are no official rules or guidelines of the contents of the audit or the audit report.
One factor imposed by the Energy Division however is the use of the energy efficiency index as one essential parameter to evaluate the energy situation and potential savings. This index has to be defined to allow the follow-up of energy efficiency on a period of time in each company and in an industrial sector.

Different audit models have been developed by auditors or transferred from other countries (Netherlands in particular).

The basic models are :
- The scanning audit
  This involves a walk through and a preliminary energy audit
- The analysing audit
  This type of audit may be focused on specific aspects or be comprehensive.

Most methods developed rely on the long term and imply an important part of transfer of know-how and appropriation of methods by the industry. Training is then involved during the audit.

The Energy Potential Scan (EPS) model is frequently used by auditors. This model is adapted from the Netherlands.

- First step is to set an audit team.
- The Energy Consumption analysis (ECA) is then performed
  This involves the development of an energy accounting system, the elaboration of a flux diagram, the analysis of methods, the calculation of the energy efficiency index
- Efficiency Scan's is conducted
  Opportunities for improvements are analysed in terms of technical feasibility, economical profitability, and impact on energy efficiency.

Energy improvements identified are classified in the following matrix:

Degree of feasibility ➔ *Pay-back time* ➔	**A** Feasibility guaranteed, available technology	**B** Uncertain feasibility, available technology	**C** Uncertain technology, unavailable technology
0 – 2 years			
2 – 5 years			
> 5 years			

Priorities are defined based on these elements.
Tables giving the energy balances are prepared and meetings with decision makers are organised to present the results and recommendations of the audit.
Transfer of know-how is involved in this model from the auditor to the members of the audit team.

Most methods used in the Walloon region lead to the setting-up of an energy accounting system and the elaboration of a table summarizing all energy consumptions (type of fuels / type of use).
The DGTRE developed in 2001 the "CAFÉ: Comptabilité analytique des fluides et des énergies". The objective is to analyse energy data in the framework of voluntary agreements and to ensure a better follow-up of the EPS method implemented in some industries.

Overall, the approaches are based on a long time period: the audits include the definition of indicators and measurements methods that will allow a follow-up and monitoring of energy saving measures over years.
Audit is not seen as shooting a static picture, but as elaborating an interactive and dynamic procedure over time. This is all the more important when audits are used to prepare the voluntary agreements. Involvement of the client is key to the success of such audits. Many visits are necessary for these models.

2.3.6 Auditors' Tools

The consultants have developed their own model reports for the different types of audits.

The DGTRE is providing a model report: audits reports should be presented according to this model.

2.3.7 Training, authorisation and quality control

No compulsory authorisation procedure exists in the Walloon region for auditors.
Usually, auditors are qualified engineers with an average of 5 years of graduate studies, and have a good knowledge and practice of industry.
An authorisation methodology is however being studied by the DGTRE.

Quality control is quite limited today. In the framework of the voluntary agreements process, the DGTRE is intending to strengthen this aspect in the coming months, by screening the audit reports.

2.3.8 Monitoring

The Walloon procedure of support to audits requires that some of the investments recommended in the audit report be implemented as a prerequisite to the payment of the subsidy. This implies that the industries that have carried out audits should inform the DGTRE of the conclusions of the audit and of the measures implemented, providing the DGTRE with useful figures for monitoring.

The monitoring will be a very strong element of the voluntary agreement process. As explained previously, most audits strongly focus on the definition of evaluation and monitoring procedures in industries, based on energy efficiency index and CO_2 emissions essentially. For each industrial sector, quantitative targets are set when negotiating the voluntary agreements, and these targets will be monitored closely.

2.3.9 Auditing volumes

2000 Walloon region data :

Audits performed to prepare voluntary agreements definition:
- 14 audits
- 800 000 euros of subsidies granted

Punctual audits performed as a decision support tool prior to an investment for energy efficiency:
- 15 audits
- 87 000 euros of financial supports.

2.3.10 Results

The main results of recent audits are the definition of the voluntary agreements.
No other data available yet.

2.3.11 Evaluation

No data available yet.

2.3.12 Observations and Future Plans

The DGTRE plans to conduct an evaluation of the audit procedure once most action plans will have been defined in the framework of voluntary agreements definition.

The DGTRE has published a new regulation called AMURE (Amélioration de l'efficience énergétique et promotion d'une utilisation plus rationnelle de l'énergie dans le secteur privé), that abrogate the AERW of 19/12/1984, and would be better adapted to the current situation.

It would involve:

- 75% subsidy for audits (internal and external costs) for companies that have signed a declaration of intent for voluntary agreements
- For all companies, 50% subsidy for external costs of audits preparing energy saving investments
- Subsidy up to 100% for professional organisations for actions aiming at improving energy efficiency globally in their sector.
- Subsidy up to 50% of the costs of implementation of an energy targeting and monitoring system.

This project is ready to be approved by the Walloon parliament.

2.4 Audits for the residential sector in the Walloon region: Guichets de l'énergie

2.4.1 Goals

The share of the residential sector represents 25% of total energy consumption in the Walloon region.
The objective set in the national plan for sustainable energy management is to go from the "business as usual scenario" that would lead in 2010 to a 8% increase of energy consumption in the residential sector, to a sustainable scenario resulting in a stabilisation of energy consumption.

2.4.2 Target sectors

Residential buildings (individuals).
Shopkeepers may also benefit from advises and audits for heating aspects.

2.4.3 Administration

The audit programme for the residential sector is managed by the energy kiosks "guichets de l'énergie". 13 energy kiosks operate in the Walloon region and are dedicated to households and very small SMEs. Their aim is to provide free advises on energy issues: they run public awareness campaigns, arrange workshops and educational activities, etc…The first kiosk was established in Liège in 1985. The Ministry of the Walloon region co-ordinates the operation of the 13 kiosks.

2.4.4 Implementing Instruments

In the framework of their activities, the energy kiosks have developed a programme of 4 different types of audits:

- The thermal audit
- Electric audit, including lighting and appliances, and when appropriate heating
- Solar sanitary hot water
- Qualitative audit at home.

This last type of audit was initially performed when owners were renovating their dwelling or investing in new equipment. It was abandoned and then reintroduced as a pilot action since September 2001 by 3 energy kiosks, as a qualitative audit. The objective is to advise individuals on practical measures to save energy on every-day life, after a visit at home.

All audits are performed by energy kiosks auditors free of charge: the persons benefiting from such audits are however requested to contribute to the audit by providing data.
28 consultants work in the energy kiosks (technical qualification of 2 to 4 years of graduate studies).

2.4.5 Energy Audit Models

Thermal audit
The audit is performed based on:
- The dwelling drawings
- A description of buildings materials, shell and systems
- or a questionnaire filled by the owner/renter.

The audit focuses mainly on the envelope of the building.
An evaluation of the insulation quality and energy consumption with their outputs is performed using an excel programme.

Energy savings measures are identified and classified according to energy improvement rate, economical benefits and pay-back time. Their cost is determined using a simple return on investment index.
Quantitative propositions are made to improve energy efficiency, based on simple calculation methods.

Electric audits
The consultant analyses electricity consumption of appliances, lighting and water heating based on invoices.
For electric heating aspects, the audit is carried out room by room, using the same overall approach as the thermal audit.

For both aspects, a tariff simulation is proposed to optimise the electricity subscription.

Solar sanitary hot water
The audit is carried out prior to an investment for the equipment of solar hot water systems. It includes dimensioning of the hot water needs, calculation of the surface required and analysis of the auxiliary needs.
In parallel to this audit, since 2001 a subsidy is available for solar hot water equipment. The energy kiosks also organise training and accompanying measures for professionals on this subject. They provide to potential customers a list of professionals that have signed a quality contract.

Qualitative audit
This audit has been tested since September 2001 by 3 energy kiosks. One auditor visits the house and spends 2 to 3 hours walking through and collecting data. Insulation, regulation and heating aspects are analysed. Advises are then given to the household.

2.4.6 Auditors' Tools

Thermal audit
An excel software tool has been developed to collect and analyse the data.

A questionnaire has been developed for individuals to collect the key data and allow the energy kiosks consultants to conduct the audit. The questionnaire is a 7-pages document analysing the following aspects:
- The definition of the needs from the owner/renter
- General data
- Heating equipment
- Sanitary hot water system
- Surfaces and volumes, description of the shell.

Upon request, the energy kiosks consultants help the owners/renters to fill the questionnaire.

A model of report has also been developed.
In a first chapter, energy losses are calculated and given for:
- Windows and doors
- Walls
- Floors
- Roofs

The global insulation level (K) is calculated

The theoretical heating power is calculated, as well as the theoretical power of hot water system.
In a third part, the conventional consumption is defined based on the various fuels.
In a fourth part, proposals are made to improve heating system and comfort.

Electric audit
A 7-pages questionnaire has been developed to collect data from the owner / renter.
An excel sheet is available for auditors.

A model report is also available including:
- a table summarizing theoretical electricity consumption for all different types of use with relative share
- a table with the theoretical consumption of the household and theoretical cost depending on the type of tariff
- a list of advises for the different types of appliances and equipment
- a simulation of energy savings that could be obtained by changing some of the equipment / appliances by more efficient ones.

For the heating system audit, the questionnaire and excel sheet used are similar to the ones used for the thermal audit.

Solar sanitary hot water
A 1-page questionnaire has been developed to collect data from the owner / renter.
An excel sheet is also available for the auditors.

2.4.7 Training, authorisation and quality control

Auditors form the energy kiosks are regularly trained. In year 2000, 14 training sessions were organised for the consultants.
The consultants have access to a very complete documentation centre providing all technical elements needed.

2.4.8 Monitoring

The number of audits performed is monitored by the DGTRE.

2.4.9 Auditing volumes

Volumes for year 2001

Energy kiosk	Thermal audits	Electric audits	Solar water audits	Qualitative audits (home visits)
Andenne	24	1	10	29
Arlon	109	0	3	104
Ath	27	0	0	26
Braine l'Alleud	12	0	0	12
Braine-le-Comte	33	6	4	24
Charleroi	22	3	4	3
Eupen	15	3	2	40
Huy	28	0	0	22
Liège	35	0	0	0
Marche	84	0	0	41
Mons	60	5	1	20
Mouscron	5	0	0	1
Ottignies	27	7	8	8
Total	**463**	**24**	**32**	**317**

2.4.10 Results

Results are very positive considering the number of audits performed, 836 in year 2001 for the Walloon region (for a population of 3,33 millions).

70% of the beneficiaries from energy kiosks services are owners.

2.4.11 Evaluation

The audit system is still quite new and some methods used are still being evaluated and improved. No other data available yet.

3 Other Programmes including Energy Audits

3.1 New energy audit programme starting in 2003 for the residential sector

A new national level scheme is being developed for the residential sector. This includes energy audits for all types of residential buildings and will be started as a promotional campaign in 2003.

The auditors will be trained to check the need for an audit based on a check-list and carry out an audit following a certain procedure. A software tool is being developed for the use of auditors.

The building owners will receive a tax refund when they attach a certificate on a completed audit to their tax announcement. The necessary changes in the tax laws and guidelines for the tax refunds are being developed.

3.2 Energy audit for the public sector in the Walloon region: the "guidance" programme

This programme aims to provide support to improve studies, management and follow-up of energy efficiency projects. It is targeted to the public service buildings managers.
The approach is to provide advises on a long-term basis rather than on a "one shot" basis.
In this programme, audits are performed by the Walloon Institute "Institut Wallon", a non-profit consultant, upon request.
The audits may either follow a general and comprehensive approach, or may be targeted on a specific problem.

The audit includes:
- Definition of priorities
- Calculation of energy data and comfort parameters
- Proposals for energy saving actions, with a simple calculation of costs, expected savings and pay-back time.

If improvements proposed are simple, they are achieved directly. Otherwise, the Walloon institute recommends to the manager some specialised consultants for feasibility studies. A follow-up is always proposed.

An average audit requires 5 man/days:
- 1 or 2 days for the visit of the compounds
- 2 to 3 days for calculations and reports.

Usually, training and information actions follow the audits. Since 1988, over 1000 managers have been trained.

All actions proposed in the framework of the guidance programme are free: audits, training and technical documents.
Some tools for energy targeting and monitoring have been developed and are also proposed to managers. An access table (COMEBAT) is available to collect data and calculate the key parameters needed for energy consumption monitoring.

The CD-ROM Energie+, financed by the DGTRE and realised by "Architecture et Climat", a department of the Catholic University of Louvain, is also an essential and very useful tool that capitalises experience gained since 1988, and allows simple audits for all energy managers of tertiary buildings. 4000 copies have been disseminated free of charge. Many tools are available in this CD-ROM: soft-wares (dimensioning (13 soft-wares), definition support (5 soft-wares), thermal simulation (10 soft-wares)), check lists, case studies…

Some questionnaires allowing a quick audit are also proposed (audit for ventilation aspects, etc.).

In the future version of the CD-ROM energie+, a "make it yourself audit " software will be proposed to tertiary buildings managers. A check-list will be proposed, allowing identification of key issues: based on this, the software will orientate users to selected recommendations. Links with some technical data will be automatically proposed. This tool is under development and should be available in January 2003.

3.3 The AGEBA programme for local authorities buildings in the Walloon region

The AGEBA programme was established in 1983 by the Ministry of the Walloon region, aiming at reducing energy consumption of the public buildings managed by local authorities (municipalities, provinces, inter-communal structures).

It was defined in the "Arrêté du Gouvernement Wallon du 13/07/1983".

Subsidies are given to local authorities for studies and investments leading to the rational use of energy. The level of subsidies is 30%.

A technical commission meets regularly to evaluate the subsidies requests and decides on the eligibility of the proposals.

The programme is managed by the DGTRE (Ministry of the Walloon region), which sub-contracts part of the technical and administrative tasks to a specialised consultant company.

Investments carried out in this framework relate, in order of frequency, to heating and regulation improvement, insulation, lighting and electricity, double glazing.

Between 1983 and 2001, 1624 projects have been accepted for subsidy by the technical commission, corresponding to the improvement of 1168 buildings. The total amount of subsidy granted in this period amounts to 467 Millions BF (11,6 Meuros).

The DGTRE has evaluated the corresponding pollutants abatement:

Type of pollutant	*Reduction of emissions (t/an)*
CO_2	44 083
SO_2	58

The average pay-back time of the investments is 5,4 years.

In 2001, 36 proposals were accepted corresponding to 24 buildings.

Observations and Future Plans
The Ministry of the Walloon region is preparing a new programme called "UREBA", which will replace the existing AGEBA and ECHOP programmes (the ECHOP programme supports financially RUE investments in educational buildings and hospitals).
This programme will include financial supports to the implementation of energy book-keeping systems and to energy audits performed by authorised auditors that will result in a more rational use of energy, the use of renewable energy or the implementation of quality CHP systems.

The level of subsidy is expected to be 50 % of total costs, and may be increased to 60% in certain conditions.
For investments, subsidies of 30% will also be available.

4 Other Activities including Energy Audits

4.1 Regional Development Companies in Flanders

Flanders has in each province a Regional Development Company. The purpose of these companies is to help in the Flanders regional development. The companies establish contacts between suppliers (industrial companies) and consumers, organise workshops and distribute publications.

Since 1997 one of the employees, the energy consultant, in each development company is dealing with energy saving matters (Energy Cell) and helping industrial companies to apply for subsidies for audits and energy saving investments.

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Currency

1 BEF = 0,0248 €
1 € = 40,3399 BEF
(Since January 1999)